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A CONTRIBUTION TO OUR KNOWLEDGE OF THE ORCHIDS OF THE SOUTHEASTERN UNITED STATES

BY

DONOVAN S. CORRELL

THIS paper presents a summary of the results of several years research on the Orchidaceae of the southeastern United States. In 1897, Chapman's Flora of the Southern United States (ed. 3, pp. 477-491) contained sixty-six species and varieties of orchids. Since that time, however, our knowledge of the southern flora has been greatly increased. Consequently, in 1933, Small (Manual of the Southeastern Flora, pp. 363-399), with a rather liberal treatment of the Orchidaceae, included one hundred and fifteen species for this region. In the present conservative treatment of this family, forty-three genera and one hundred and ten species and varieties of orchids are recognized in the southeastern states which include North Carolina, Tennessee, Mississippi, Louisiana and those states south of the North Carolina-Tennessee boundary.

The Table records the species which have been found in each of the southeastern states and is based upon a critical examination of specimens found in forty-nine herbaria in the southern, eastern and central United States. The herbarium material examined was supplemented by five extensive collecting trips which I made in this region. The occurrence and degree of abundance of a species in each of the states is indicated in the table by the following symbols: R (rare); L (localized); O (occasional); F (frequent); C (common). In some cases where a species has been reported in literature from one of the states under consideration, but no specimen has been observed from this state, the report is designated in the Table by the symbol X.

Although many of the species are apparently limited to one or more of the several geographical regions which are found in the Southeast, others have been found to be universally distributed throughout the entire region. Some of the species which are limited in their distribution are those which are apparently confined to the narrow strip of subtropical vegetation found on the southern tip of the Florida peninsula; namely, the species of *Oncidium*, *Cyrtopodium*, *Basiphyllaea* and others. On the other hand, some few of the species are restricted to the mountains; namely, *Habenaria psycodes* and its variety *grandiflora*, *H. orbiculata*, *H. viridis* var. *bracteata* and *Goodyera repens* var. *ophioides*. This should be taken into consideration in interpreting the symbols in the Table. For instance, a species may be found only in the Mountain and Piedmont regions of North Carolina where it is common, while, at the same time, it may not have been found at all in the Coastal Plain region. In this case, the species would be marked "common" (C) for North Carolina because it is common within its natural limit of distribution. The most abundant and widely distributed species found in the southeastern states are *Calopogon pulchellus*, *Habenaria ciliaris*, *H. cristata*, *Pogonia ophioglossoides*, *Malaxis unifolia*, *Tipularia discolor* and several species of *Spiranthes*.

Some exceptional range extensions were discovered during this research; notably, *Spiranthes Romanzoffiana* from South Carolina, *Listera convallarioides* from the mountains of North Carolina and *Arethusa bulbosa* from Louisiana. *Spiranthes Romanzoffiana* is represented (in the Gray Herbarium) by a single plant mounted on a sheet with a plant of *S. cernua* var. *odorata.* The name on the label, in M. A. Curtis' handwriting, is *Spiranthes cernua.* The occurrence of this species in South Carolina is most unusual, if not doubtful, since the nearest station is in New York. Two collections of *Listera convallarioides* were seen from the southeastern states. These were a specimen from "Mts. Carol." in the Gray Herbarium which was collected by Asa Gray and a specimen in the herbarium of the New York Botanical Garden labeled "Southern Flora" by A. W. Chapman. The occurrence of this widely ranging Canadian and Northwestern species in the mountains in North Carolina is very interesting. *Arethusa bulbosa* is represented from Louisiana by a solitary specimen in the herbarium of the Missouri Botanical Garden mounted on a sheet with plants of *Pogonia ophioglossoides* which were collected by Josiah Hale at Alexandria, Rapides Parish, Louisiana.

In studying the Orchidaceae of the southeastern United States, I have arrived at certain conclusions concerning the status of some of the so-called species in the genera *Calopogon* and *Spiranthes.* In a conservative treatment of these two genera, it is necessary to recognize some of the material under the following new combinations.

Calopogon barbatus *(Walt.) Ames* var. **multiflorus** *(Lindl.) Correll comb. nov.*

Calopogon multiflorus Lindley Gen. & Sp. Orch. Pl. (1840) 425.

Type locality: "Hab. in Florida, *F. Cozzens.*"
Limodorum multiflorum Mohr in Bull. Torr. Bot. Club 24 (1897) 23.

Limodorum pinetorum Small in Bull. N.Y. Bot. Gard. 3 (1905) 421.

Basis for my conception of the variety: An examination of Nos. 4305 and 6840 in Herb. Ames which were compared by Ames with the type of *Calopogon multiflorus* at Kew; also an examination of the type of *Limodorum pinetorum (Small 1676)* in Herb. N.Y. Bot. Gard. and an examination of No. 19313 (Co-type of *L. pinetorum*) in Herb. Ames which was compared by Ames with Lindley's type of *Calopogon multiflorus* at Kew.

Description: Rootstalk a horizontal elongate (rarely bulbous) corm which is often 4 cm. long and 5 mm. in diameter, having a tuft of roots at the proximal end and the remains of the old stalk at the distal end. Plant scapose, erect, rigid, glabrous, 1.5–4.5 dm. tall, often with several scarious sheaths at the base; stem green below, chocolate-colored or dark madder-purple above, usually geniculate at the base (two stems occasionally produced from the same corm). Leaves (when present) one or two, narrowly linear, long-acuminate, basal, the lower portion sheathing the stem, firm and rigid, conspicuously nerved, conduplicate, 4–19 cm. long, mostly less than 5 mm. wide. Inflorescence a dense or loose elongate raceme composed of six to ten or more showy flowers which open in rapid succession, 3.5–15 cm. long, 3–3.5 cm. in diameter. Floral bracts ovate-lanceolate to lanceolate, long-acuminate, 5–10 mm. long. Flowers vividly magenta-purple to deep crimson, on slender pedicellate ovaries which are 6–10 mm. long. Lateral sepals rising from a wide base, ovate-oval to broadly lanceolate, falcate, abruptly acute or acuminate (often long-acuminate), sometimes keeled at the apex, 11–13 mm. long, 5–7 mm. wide. Dorsal sepal narrowly oblong, somewhat concave, acute or apiculate, 13–14.5 mm. long, 4–6 mm. wide. Petals with a rather prominent claw, broadly oblong-elliptic, pandurate or obovate (rarely cuneate) and rounded, obtuse or acute, widest above the middle, with the upper margin often irregularly crenulate, 10–13 (averaging 11) mm. long, 4–6 mm. wide above the middle. Lip obscurely 3-lobed, 8–9.5 mm. long; lateral lobes more distinct than in the species, basal, broadly rounded, separated from the mid-lobe by a short isthmus which has parallel sides; mid-lobe triangular-deltoid, with a wide slightly rounded-truncate or retuse apex (occasionally apiculate), with essentially straight (not rounded) lateral margins, 8–10 mm. wide; disc bearded on the central portion with clavellate (often bifurcate) hairs, the long hairs near the base bright yellow, the shorter central hairs orange and the anterior hairs (not reaching the apical margin) gradually reduced to purple papillae. Column 5.5–7 mm. long, broadly winged on each side near the apex, 4.5–6 mm. wide across the wings; the pair of wings when spread out semiorbicular, subtruncate at the base.

COMMENTS: *Calopogon barbatus* and *C. barbatus* var. *multiflorus* intergrade in all of their floral segments. However, var. *multiflorus*, besides having more flowers in the raceme than does the species, also has petals which are constantly widest above the middle, whereas those of the species are constantly widest below the middle.

HABITAT: Acid soils; most commonly found in recently burnt-over damp sandy pinelands; also found in flatwoods, pine-barrens, among saw palmettos, on the edge of hammocks and in swampy fields or grassy savannahs.

FLOWERING SEASON: Early March (rarely February) to July.

ILLUSTRATION: Ames Contribution to Our Knowledge of the Orchid Flora of Southern Florida (1904) pl. 10 (as *C. multiflorus*).

GEOGRAPHICAL DISTRIBUTION:

Georgia: Camden and Charlton Counties.

Florida: Alachua, Brevard, Broward, Collier, Dade, Duval, Franklin, Highlands, Hillsborough, Lee, Levy, Manatee, Martin, Monroe, Nassau, Orange, Pasco, Pinellas, Polk, Saint Johns, Seminole and Volusia Counties.

Alabama: Mobile County.

Mississippi: Jackson County.

Spiranthes gracilis *(Bigel.) Beck* var. **brevilabris** *(Lindl.) Correll comb. nov.*

Spiranthes brevilabris Lindley Gen. & Sp. Orch. Pl. (1840) 471.

TYPE LOCALITY: "Hab. in Texas, *Drummond, Andrieux.*"

BASIS FOR MY CONCEPTION OF THE VARIETY: An examination of No. 2304 in Herb. Ames which was compared by Ames with Lindley's type of *S. brevilabris* at Kew.

DESCRIPTION: Similar to the species except for the densely pubescent spike. Rachis with whitish pubescence; ovaries more or less covered with a dense mat of reddish brown hairs (rarely sparsely pubescent); perianth parts somewhat pubescent on the outer surface. Plant 1–3.5 dm. tall. Leaves similar to those of the species, mostly persistent. Spike 2–15 cm. long. Floral bracts usually much longer than in the species, 5–14 mm. long, awn-like at the apex. Flowers apparently white or cream-colored (no fresh material was seen). Petals usually irregularly eroded near the apex. Lip with longer and more finely lacerate fringes than in the species (often fringed along the margin to the base), strongly arcuate-decurved, often conspicuously constricted at the middle, with a dense tuft of hairs on the disc near the apex; basal callosities thick, stout, prominent.

Comments: In 1840, Lindley (Gen. & Sp. Orch. Pl. pp. 471-472), in describing *S. brevilabris*, wrote: "Labello brevi oblongo utrinque rotundato apice crispo medio pubescente. . . . . This seems distinct from *S. gracilis*, to which it is the most nearly allied, in its spikes being very dense and covered with coarse short hairs; the lip too has quite a different form. Flowers are stated by Andrieux to be purple."

Later, 1905, Ames (Orch. 1, p. 123) wrote: "*S. brevilabris*, Lindl., seems to be a pubescent form of *S. gracilis*, Beck." I have examined material from the southeastern states and Texas which is at once distinct from typical *S. gracilis*. The Texas material (cited below) is so robust and densely pubescent that, if it were aphyllous or if the leaves were linear instead of being ovate-oblong, it could immediately be referred to *S. vernalis*. Besides having a densely pubescent spike, var. *brevilabris* is characterized by the lip having very deeply and finely lacerate-fringed margins and a dense tuft of hairs on the disc near the apex. I am unable to state the color of the flowers. It is highly improbable that they are purple as Andrieux stated.

Habitat: In dry prairies and pine-barrens or open sandy soil and wet pinelands.

Flowering season: February to May.

Geographical distribution (Specimens examined):

Georgia: Thomas County: Thomasville, April 1, 1903, *E. B. Taylor* (Herb. Ames); Thomasville, late March 1903, *Mrs. A. P. Taylor* (Herb. Ames). Also Wrightsboro (spike pubescent!), *A. W. Chapman* [?] (Herb. N.Y. Bot. Gard.).

Florida: Hillsborough County: Tampa Bay, 1834, *Dr. Burrows* (Herb. N.Y. Bot. Gard.). Lee County: Vicinity of Fort Meyers, February 28, 1916, *P. C. Standley 12820* (U.S. Nat. Herb.); Vicinity of Fort Myers, November 11, 1916, *Jeanette P. Standley 409* (U.S. Nat. Herb.); Vicinity of Fort Myers, December 17, 1919, *P. C. Standley 18939* (U. S. Nat. Herb.); about 6.5 miles northwest of Fort Myers, February 8, 1938, *C. C. Deam 58768* (Herb. Duke Univ.). Polk County: near Bartow, April 3, 1931, *E. J. Palmer 38376* (Herb. Ames and U. S. Nat. Herb.). Also Fort Lauderdale to Miami, February 1911, *J. K. & G. K. Small & J. J. Carter 3319* (Herb. Ames and Herb. N.Y. Bot. Gard.); Fort Shackleford, Big Cypress, March 7, 1919, *P. P. Sheehan* (Herb. N.Y. Bot. Gard.).

Louisiana: Orleans Parish: New Orleans, *Drummond 405* (Gray Herb.). Also "Louisiana, April", *J. Hale* (Herb. N.Y. Bot. Gard.).

Texas: Galveston County: Galveston, May 1843, *F. Lindheimer* [labeled *S. brevilabris* by Asa Gray] (Gray Herb.); Kemah, alt. 30 ft., April 21, 1924, *G. L. Fisher 376* (U.S. Nat. Herb.). Harris County: Houston, March 1840, *F. Lindheimer* (Gray Herb.); Houston, April 1, 1872, *E. Hall 626* (Gray Herb., Brown Univ. Herb. & U.S. Nat. Herb.); Houston, alt. 50 ft., April 13, 1924, *G. L. Fisher 377* (U. S. Nat. Herb.).

Spiranthes gracilis *(Bigel.) Beck* var. **floridana** *(Wherry) Correll comb. nov.*

Ibidium floridanum Wherry in Journ. Wash. Acad. Sci. 21 (1931) 49.

TYPE LOCALITY: Florida, Duval County, near Loretto, April 14, 1930, *Edgar T. Wherry*.

Spiranthes floridana Cory in Rhodora 38 (1936) 405.

BASIS FOR MY CONCEPTION OF THE VARIETY: An examination of the type of *Ibidium floridanum* in U. S. Nat. Herb.; also examination of other material collected and distributed by Wherry under the name of *I. floridanum.*

DESCRIPTION: Similar to the species except for the lip having a yellow (instead of green) center and having persistent leaves which are much narrower and elongate. The variety also differs markedly from the species in that the spike is secund (rarely spiral).

Plant glabrous (occasionally sparsely pubescent above), 1.4–5.5 dm. tall; stem and leaves light green or yellowish green. Lateral sepals narrowly lanceolate, acuminate, projecting horizontally and conspicuously beyond the arcuate-decurved lip. Petals often irregularly eroded near the apex. Lip ovate to ovate-oblong, truncate or rarely retuse; median portion of the disc yellow (rarely with an obsolete tuft of hairs on the disc near the apex); basal callosities stout or slender.

COMMENTS: In 1931, Wherry (in Journ. Wash. Acad. Sci. 21, p. 49) segregated *Ibidium floridanum* from *I. gracile* (Bigel.) House, stating: "... search for morphological differences between them has not been particularly successful. They are, however, more or less distinct in flower color, sepal length, habitat, range, and blooming period, and show no evident intergradation." Furthermore, he said that the ranges of the two species barely overlap. He limited the range of distribution southward for *I. gracile* to South Carolina and east-central Alabama.

On April 6, 1938, I collected a number of specimens of *Spiranthes gracilis* near Gainesville, Alachua County, Florida. The lip of the flowers on all of these plants had the characteristic vividly green markings of *S. gracilis.* During the same week a number of collections of var.

floridana were made in several other counties in northern Florida and southern Georgia. Although Wherry limited the range of *S. gracilis* from east-central Alabama and South Carolina northward, I have examined many specimens of the species from Florida, Louisiana and Texas.

In examining the "noteworthy specimens" of *I. floridanum* cited by Wherry, I found that the Texas, Louisiana and two of the Florida citations are clearly referable to *S. gracilis* var. *brevilabris.* The spike in each of these plants is densely pubescent. It so happens that these two varieties (var. *brevilabris* and var. *floridana*) have the same flowering season. Thus it would be convenient to group them as a single variety under *S. gracilis* if flowering season could be used as a basis for separating species and varieties. In such a case, the plants would stand as *S. gracilis* var. *brevilabris,* the oldest name. However, after having examined material of *I. floridanum,* I regard the essentially glabrous plants upon which Wherry based his description to be taxonomically distinct from var. *brevilabris* and also varietally different from *S. gracilis.*

HABITAT: In wet sandy open pine-barrens and flatwoods, mucky or boggy soil in low pinelands, in savannahs, palmetto-scrub pineland or oak woods and on the edge of swamps and pocosins.

FLOWERING SEASON: January (rarely November and December in Florida) to May.

ILLUSTRATION: Wherry in Journ. Wash. Acad. Sci. 21 (1931) 50, fig. 1 (as *Ibidium floridanum*).

GEOGRAPHICAL DISTRIBUTION:

North Carolina: Pender County.

South Carolina: Charleston, Florence and Sumter Counties.

Georgia: Camden and Charlton Counties.

Florida: Bradford, Brevard, Dade, Duval, Flagler, Hillsborough, Lake, Lee, Nassau, Osceola, Pinellas, Polk, Putnam, Saint Johns, Santa Rosa, Sarasota, Volusia and Washington Counties.

Alabama: Mobile County.

Spiranthes cernua *(L.) L.C.Rich.* var. **odorata** *(Nutt.) Correll comb. nov.*

Neottia odorata Nuttall in Journ. Acad. Nat. Sci. Phila. 7 (1834) 98.

TYPE LOCALITY: "... along the borders of the Neuse River, at Newbern, in North Carolina, on the wet and muddy shores. . ."

Spiranthes odorata Lindley Gen. & Sp. Orch. Pl. (1840) 467.

Gyrostachys odorata O. Kuntze Rev. Gen. Pl. 2(1891) 664.

Ibidium odoratum House in Muhlenbergia 1 (1906) 128.

BASIS FOR MY CONCEPTION OF THE VARIETY: An examination of the type of *Neottia odorata* (according to Small, *H. Loomis*, cf. Journ. N.Y. Bot. Gard. 34 (1933) 106) in Herb. N. Y. Bot. Gard. (a flower of the type is figured by Correll in Journ. Elisha Mitchell Sci. Soc. 53 (1937) pl. 15, fig. 8); also an examination of McCarthy's collection from the type locality in Herb. Phila. Acad. Nat. Sci.

DESCRIPTION: Similar in habit to the species, stoloniferous. Roots long, fleshy, coarse. Plant erect, stout or slender, often very succulent, glabrous below, downy-pubescent above, 1.8–9.5 dm. tall. Leaves mostly basal, often extending up the stem, linear to lanceolate, 5–40 cm. long, 5–20 mm. wide. Inflorescence a densely flowered compact spike of tubular ringent flowers in several spiral or vertical ranks, 4.5–18 cm. long, 1–3 cm. in diameter. Floral bracts lanceolate, acuminate-attenuate, mostly longer than the flowers, 8–15 mm. long. Flowers white, marked with green or cream-tinged, very fragrant of vanilla. Sepals oblong-lanceolate to lanceolate, acute to acuminate, 6–13.5 mm. long; lateral sepals free. Petals coherent with the dorsal sepal, linear, obtuse to acute, 6–13.5 mm. long, 1–2 mm. wide. Lip with the basal half dilated, rhomboidal, tapering to the obtuse apex, broadly ovate to broadly triangular, 6–14 mm. long, 3.5–8 mm. wide near the base; basal callosities prominent, recurved. Column about 5 mm. long.

COMMENTS: I have been unable to find enough constant differences in *Spiranthes cernua* and *S. odorata* to retain them as separate entities. *Spiranthes odorata* seems to be a luxuriant variant of *S. cernua.* The characters found in literature, such as leaves radical *(S. cernua)* and leaves extending up the stem *(S. odorata)*, intergrade and break down. Even the lip difference, which may be considered as the most reliable character to separate them, is not always sufficiently distinct to be dependable. Ames (Orch. 1 (1905) 125) in his key grouped the two plants together as "Lip ovate-oblong" and then separated them on leaf differences. In 1834, Nuttall (in Journ. Acad. Nat. Sci. Phila. 7, p. 98) said of *Neottia odorata*: "... labello ovato integro, margine undulato subfimbriato." Linnaeus (Species Plantarum 2 (1753) 946) said that the lip of *Orchis cernua (Spiranthes cernua)* was oblong. An examination of a photograph of his type would seem to illustrate this. No. 2230 in Herb. Ames which was compared by Ames with the Linnean type has two plants havving flowers with strongly ovate lips. These plants are not in complete agreement with Linnaeus' description. They do, however, agree in lip character with Nuttall's description. In 1921, Ames (in Rhodora 23, p. 74) considered *S. cernua* and *S. odorata* to be the same. He wrote: "*Spiranthes cernua* is so variable that attempts are sometimes made to discover in it a polymorphic species susceptible of splitting. . . It would seem that *S. odorata* owes its success in escaping synonymy to the fact that it was born under authority and subsequently sustained because efforts to recognize it have persisted. I am convinced that *S. odorata* is conspecific with *S. cernua.*" Ames' illustration of the lip of *S. cernua* (in Rhodora 23 (1921) pl. 127, fig. 6) is what I consider to be typical of the species. Correll's illustration of the lip of *S. odorata* (in Journ. Elisha Mitchell Sci. Soc. 53 (1937) pl. 15, fig. 8) is typical of *S. cernua* var. *odorata.* Ames (Orch. 1 (1905) 123) considered *Gyrostachys triloba* and *G. constricta* of Small as synonymous with *S. odorata.* I have examined Small's types and consider them to be the same as *S. cernua.*

HABITAT: In marshes, swamps, hammocks, low woods, wet pinelands and borders of rivers and lakes, occasionally in water or on rotten stumps and wood, often in dense clumps because of its stoloniferous habit; in the mountains up to 5000 feet where it is found in dry sandy soils on open hillsides and wooded ridges.

FLOWERING SEASON: September to January; rarely May and July in Florida.

ILLUSTRATION: Correll in Journ. Elisha Mitchell Sci. Soc. 53 (1937) pl. 15, fig. 8—Morris and Eames Our Wild Orchids (1929) pls. 92 and 93—Small in Journ. N. Y. Bot. Gard. 34 (1933) 107, fig. 1; 35 (1934) 18, fig. 1.

GEOGRAPHICAL DISTRIBUTION: I have seen specimens referable to the variety from scattered stations throughout the area of distribution of the species.

North Carolina: Brunswick, Chowan, Columbus, Craven, Currituck, Halifax, Haywood, New Hanover and Scotland Counties.

South Carolina: Darlington County.

Georgia: Thomas County.

Florida: Alachua, Brevard, Broward, Clay, Dade, Lee, Levy, Marion, Orange, Saint Lucie and Sumter Counties.

Tennessee: Blount and Cocke Counties.

Louisiana: East Baton Rouge, Orleans, Plaquemines, St. Tammany, Terrebonne, West Baton Rouge and West Feliciana Parishes.

A complete synonymy of the majority of the species listed in the Table may be found in Ames Enumeration of the Orchids of the United States and Canada (1924). I have followed, for the most part, the nomenclature found therein. However, some further revisions other than those made above and those found in Ames Enumeration were thought necessary and are as follows:

CALOPOGON PULCHELLUS *(Salisb.) R. Brown* var. SIMPSONII *(Small) Ames* = **Calopogon pulchellus** *(Salisb.) R. Brown.* The mid-lobe of the lip of this species is highly variable and the leaves also vary in shape from almost terete to broadly lanceolate.

CYPRIPEDIUM PARVIFLORUM *Salisbury* and C. PUBESCENS *Willdenow* = **Cypripedium Calceolus** *Linnaeus* var. **pubescens** *(Willd.) Correll.* A comprehensive treatment of this variety may be found in Bot. Mus. Leafl. Harv. Univ. 7 (1938) 1–18.

×HABENARIA CANBYI *Ames* = ×**Habenaria Chapmanii** *(Small) Ames (Habenaria ciliaris*×*H. cristata* and *H. blephariglottis*×*H. cristata).* I have seen specimens of typical ×*H. Canbyi* from Hardin County, Texas.

W. M. Canby, who first collected the hybrid near Lewes, Delaware, recorded the following notes: "*Habenaria cristata*×*blephariglottis*? Intermediate in color, size of flowers, openness of panicle, etc. between the two species. . . . in company with *H. cristata* and *H. blephariglottis*, July 27, 1878." Ames (in Rhodora 10 (1908) 70) recognized the plant as a hybrid and named it for the collector. Earlier, in 1903, Small (Flora Southeastern U.S. (1903) 314) described ×*H. Chapmanii* as a hybrid of *H. cristata* × *H. ciliaris*. So far as I can determine, *H. blephariglottis* has not been reported or collected in the south further west than Mississippi; whereas, *H. ciliaris* occurs in eastern Texas. Although *H. cristata* has not been reported from Texas, I believe it should occur there since I have collected the species throughout Louisiana, including several parishes adjacent to Texas. The occurrence of ×*H. Canbyi* in Texas and the apparent lack of *H. blephariglottis* in Louisiana and Texas arouses suspicion as to which species are the true parents of the hybrid. Since Small's type of ×*H. Chapmanii* is undoubtedly a hybrid of *H. cristata* × *H. ciliaris* or *H. blephariglottis* and since it is impossible, without experimental evidence, to determine the true identity of the parent species of either of the described hybrids, we should accept the older and valid name and consider all of the so-called hybrids exhibiting intermediate characters between the above species as ×*H. Chapmanii*.

HABENARIA MACROCERATITIS *Willdenow* = **Habenaria quinqueseta** *(Michx.) Swartz.* These two concepts have been separated primarily on the length of the spur; the spur of *H. quinqueseta* being less than 10 cm. long, whereas the spur of *H. macroceratitis* is more than 10 cm. long. I have compared Florida material referred to these two concepts with material from the West Indies, Central and South America and have found a graduated series in the length of the spur from 4 to 18 cm.

PONTHIEVA BRITTONAE *Ames* = **Ponthieva racemosa** *(Walt.) Mohr.* Ames (in Torreya 10 (1910) 90), in describing *P. Brittonae,* wrote: "*Ponthieva Brittonae* is very closely allied to *P. racemosa* from which it differs chiefly in its smaller flowers, slenderer raceme, and in its differently formed petals." I have examined numerous sheets of *P. racemosa* as well as a sheet compared by Ames with the type of this species and also all available material of so-called *P. Brittonae* (including the type) and have been unable to find sufficient differences to separate them. A complete series of differences in size was found in the plants examined. The petals were also found to be variable.

×**Spiranthes laciniata** *(Small) Ames.* I have examined the type of *Gyrostachys laciniata* Small and a number of other sheets of *Spiranthes laciniata* in the New York Botanical Garden Herbarium which were referred to *S. laciniata* by Small, and, after having compared this material with authentic specimens of *S. praecox* and *S. vernalis,* I have concluded that *S. laciniata* should be considered as a hybrid of these two concepts. The hybrid plants are rather coarse, having intermediate characters of *S. praecox* and *S. vernalis.* Some of the forms often approach very closely one or the other of the parent species.

I have examined the North Carolina specimen cited as *Malaxis Bayardi* Fernald (in Rhodora 38 (1936) 403) and consider it to be *M. unifolia* Michx.

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TABLE

Distribution of the species by states and degree of abundance:
R (rare); L (localized); O (occasional); F (frequent); C (common);
X (reported in literature)

	Ala.	Fla.	Ga.	La.	Miss.	N.C.	S.C.	Tenn.
Aplectrum hyemale *(Muhl.) Torr.*	X		LR			O	X	O
Arethusa bulbosa *L.*				LR		R		
Basiphyllaea corallicola *(Small) Ames*		LR						
Bletia tuberosa *(L.) Ames*		LC						
Brassia caudata *(L.) Lindl.*		LR						
Calopogon barbatus *(Walt.) Ames*	R	C	F	R	R	O	LO	
Calopogon barbatus *(Walt.) Ames* var. multiflorus *(Lindl.) Correll*	LR	C	LR		LR			
Calopogon pallidus *Chapm.*	O	C	F	LR	LO	F	F	
Calopogon pulchellus *(Salisb.) R.Br.*	F	C	C	O	O	C	F	F
Campylocentrum pachyrrhizum *(Reichb.f.) Rolfe*		LR						
Centrogenium setaceum *(Lindl.) Schltr.*		LR						
Cleistes divaricata *(L.) Ames*	R	F	O	R	LR	F	F	R
Corallorrhiza maculata *Raf.*						O		X
Corallorrhiza odontorhiza *(Willd.) Nutt.*	O		O		R	C	LO	O
Corallorrhiza trifida *Chatelain*						X		X
Corallorrhiza Wisteriana *Conrad*	LR	F	O	O	R	R	O	F
Cranichis muscosa *Sw.*		LR						
Cypripedium acaule *Ait.*	R		R			F	R	F

	Ala.	Fla.	Ga.	La.	Miss.	N.C.	S.C.	Tenn.
Cypripedium Calceolus *L.* var. pubescens *(Willd.) Correll*	O		F	R	R	F	R	C
Cypripedium reginae *Walt.*						R		X
Cyrtopodium punctatum *(L.) Lindl.*		LF						
Epidendrum anceps *Jacq.*		LF						
Epidendrum Boothianum *Lindl.*		LR						
Epidendrum cochleatum *L.* var. triandrum *Ames*		LC						
Epidendrum conopseum *R.Br.*	LR	C	F	LF		LR	LO	
Epidendrum difforme *Jacq.*		LF						
Epidendrum nocturnum *Jacq.*		LC						
Epidendrum pygmaeum *Hook.*		LR						
Epidendrum rigidum *Jacq.*		LC						
Epidendrum strobiliferum *Reichb.f.*		LR						
Epidendrum tampense *Lindl.*		C						
Erythrodes querceticola *(Lindl.) Ames*		C		O				
Eulophia alta *(L.) Fawc. & Rendle*		LF						
Eulophia ecristata *(Fern.) Ames*		C		R		LR		
Goodyera pubescens *(Willd.) R.Br.*	LR	X	LO			C	LO	C
Goodyera repens *(L.) R.Br.* var. ophioides *Fern.*		X				O		O
×Habenaria Andrewsii *White ex Niles*						R		
Habenaria blephariglottis *(Willd.) Hook.*	O	C	F		LC	F	R	X

	Ala.	Fla.	Ga.	La.	Miss.	N.C.	S.C.	Tenn.
Habenaria blephariglottis (*Willd.*) *Hook.* var. holopetala (*Lindl.*) *A. Gray*	O				R	R		O
×Habenaria Chapmanii (*Small*) *Ames*		O	O			R		
Habenaria ciliaris (*L.*) *R.Br.*	F	C	C	F	O	C	F	C
Habenaria clavellata (*Michx.*) *Spreng.*	O	R	F	F	O	C	O	O
Habenaria cristata (*Michx.*) *R.Br.*	O	F	F	C	O	C	F	R
Habenaria distans *Griseb.*		LR						
Habenaria flava (*L.*) *R.Br. ex Spreng.*	R	O	F	R	R	R	R	R
Habenaria integra (*Nutt.*) *Spreng.*	O	O	O	R	LF	O	R	R
Habenaria lacera (*Michx.*) *Lodd.*	R		R		R	O	R	R
Habenaria leucophaea (*Nutt.*) *A. Gray*				R				
Habenaria nivea (*Nutt.*) *Spreng.*	O	C	F	O	LO	R	R	
Habenaria orbiculata (*Pursh*) *Torr.*			?			R		X
Habenaria peramoena *A. Gray*	R		?		R	O	LR	R
Habenaria psycodes (*L.*) *Spreng.*			R			O		O
Habenaria psycodes (*L.*) *Spreng.* var. grandiflora (*Bigel.*) *A. Gray*						R		X
Habenaria quinqueseta (*Michx.*) *Sw.*	R	C	X	R	X		R	X
Habenaria repens *Nutt.*	R	C	O	F		LR	O	

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Habenaria strictissima *Reichb.f.* var. odontopetala *(Reichb.f.) L.O. Williams*		C						
Habenaria viridis *(L.) R.Br.* var. bracteata *(Muhl.) A.Gray*						R	X	X
Harrisella porrecta *(Reichb.f.) Fawc. & Rendle*		O						
Hexalectris spicata *(Walt.) Barnhart*	O	F	F	O	O	O	O	F
Ionopsis utricularioides *(Sw.) Lindl.*		LR						
Isotria affinis *(Austin) Rydb.*						R		
Isotria verticillata *(Muhl.) Raf.*	O	R	R	R	O	F	R	O
Lepanthopsis melanantha *(Reichb.f.) Ames*		LR						
Liparis elata *Lindl.*		LR						
Liparis liliifolia *(L.) L.C.Rich. ex Lindl.*	LR	X	LR			F	O	O
Liparis Loeselii *(L.) L.C.Rich.*	LR					R		X
Listera australis *Lindl.*	X	O		F	R	LR	O	X
Listera convallarioides *(Sw.) Nutt.*						LR		X
Listera cordata *(L.) R.Br.*						R		
Listera reniformis *Small*						F		R
Macradenia lutescens *R.Br.*		LR						
Malaxis monophyllos *(L.) Sw.* var. brachypoda *(A.Gray) Morris & Eames*								X
Malaxis spicata *Sw.*		C	LR				LR	
Malaxis unifolia *Michx.*	F	LR	C	F	X	C	O	O
Maxillaria crassifolia *(Lindl.) Reichb.f.*		LR						

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Oncidium carthaginense *(Jacq.) Sw.*		LR						
Oncidium floridanum *Ames*		LF						
Oncidium luridum *Lindl.*		LF						
Oncidium variegatum *Sw.*		LR						
Orchis spectabilis *L.*	R		R			O	R	F
Pleurothallis gelida *Lindl.*		LR						
Pogonia ophioglossoides *(L.) Ker-Gawl.*	O	C	F	O	O	F	F	R
Polyrrhiza Lindenii *(Lindl.) Cogn.*		LR						
Polystachya luteola *(Sw.) Hook.*		LC						
Ponthieva racemosa *(Walt.) Mohr*	O	C	R	LR		LR	O	
Prescottia oligantha *(Sw.) Lindl.*		LR						
Spiranthes Beckii *Lindl.*	F	C	C	F	O	C	O	F
Spiranthes cernua *(L.) L.C.Rich.*	O	O	F	O	R	C	F	F
Spiranthes cernua *(L.) L.C. Rich.* var. odorata *(Nutt.) Correll*	X	C	R	O		O	R	R
Spiranthes cranichoides *(Griseb.) Cogn.*		F						
Spiranthes elata *(Sw.) L.C.Rich.*		LR						
Spiranthes gracilis *(Bigel.) Beck*	F	O	F	R	R	C	O	F
Spiranthes gracilis var. brevilabris *(Lindl.) Correll*		R	R	R				
Spiranthes gracilis var. floridana *(Wherry) Correll*	R	C	R			R	R	

	Ala.	Fla.	Ga.	La.	Miss.	N.C.	S.C.	Tenn.
×Spiranthes laciniata *(Small) Ames*	R	O	O	R		LR	LR	
Spiranthes longilabris *Lindl.*	R	F	R	O	LR	LR	R	
Spiranthes lucida *(H. H. Eaton) Ames*						X		X
Spiranthes ovalis *Lindl.*	R	R	R	O	R	LR		X
Spiranthes polyantha *Reichb. f.*		LR						
Spiranthes praecox *(Walt.) S. Wats.*	O	C	F	O	LR	C	F	
Spiranthes Romanzoffiana *Cham.*							?	
Spiranthes tortilis *(Sw.) L. C. Rich.*		LO		LR				
Spiranthes vernalis *Engelm. & Gray*	R	C	F	O	R	C	O	R
Stenorrhynchus orchioides *(Sw.) L. C. Rich.*		O						
Tipularia discolor *(Pursh) Nutt.*	O	LO	F	C	X	C	F	F
Triphora cubensis *(Reichb. f.) Ames*		LR						
Triphora trianthophora *(Sw.) Rydb.*	R	O	R		R	F	R	F
Tropidia polystachya *(Sw.) Ames*		LO						
Vanilla articulata *Northrop*		LR						
Vanilla Eggersii *Rolfe*		LO						
Vanilla fragrans *(Salisb.) Ames*		LR						
Vanilla phaeantha *Reichb. f.*		LR						
Zeuxine strateumatica *(L.) Schltr.*		O						